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MOUND TRITIUM D&D LARGE- SCALE DEMONSTRATION AND DEPLOYMENT PROJECT

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Deactivation and Decommissioning Focus Area

Mid-year Review

May 26, 1999





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- Project History - The Mound Site

- Labs in Dayton, part of Manhattan Project - Consolidated in 1947, to site in Miamisburg, Ohio
- Weapons research, development, & production facility
- RTG production
- Designated for shutdown in 1991





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- Project History - Main Hill Tritium Complex

- Three Major Buildings / Facilities, SW/R, T, HH
- Mission - Weapons related R&D and production
- Operated until September 1998
- Undergoing Safe-Shutdown





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- Project History - Tritium LSDDP

- Selected in January 1998 - 2nd round
- First Integrating Contractor Team (ICT) Meeting in March 1998
- Initial Technology Selections in June 1998
- Extended by one year - into FY01





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Mound ICT Members

- Babcock & Wilcox of Ohio
- Lawrence Livermore National Laboratory





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Mound ICT Members - cont.

- Princeton Plasma Physics Laboratory
- Foster Wheeler Environmental Corp.
- Los Alamos National Laboratory
- IT Corp.





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Mound ICT Members - cont.

- Westinghouse Savannah River Co.
- British Nuclear Fuels Limited
- Florida International University





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Main Hill Tritium Safe-Shutdown Needs

- Tritium contaminated glove boxes decontamination / dismantlement
- Tritium characterization techniques
- Tritium specialties decontamination





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Main Hill Tritium Safe-Shutdown Needs - cont.

- Mixed waste treatment and disposal
- Tritiated water treatment
- Piping system removal and disposition





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Site Technology Coordinating Group Needs

- **Improved facility survey techniques**
- **Decontamination technique for tritiated glove boxes**
- **Method for controlling off-gassing and removable tritium contamination inside piping**
- **Extraction of plutonium and thorium from soils**





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Site Technology Coordinating Group Needs - cont.

- **Treatment/disposal of tritiated pump oil & mercury**
- **Tritium soil treatment**
- Soil counting system which accepts soil slugs
- Portable Unit for Preparing Field Soil Samples
- Automated Dust Suppression System





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Tritium LSDDP Goals

- Improved health and safety conditions
- Improved productivity and thus reduced schedules
- Improved D&D economics
- Demonstrated potential for complex-wide implementation





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Scope of Work

- Systematically explore and identify methods to improve worker safety while achieving cost and schedule savings
- Integrate and demonstrate a variety of improved/innovative, commercially available technologies on a radioactive full-scale facility





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Technical Approach

- Identify developed, field ready technologies
- Review and assess technologies
- Rank technologies for order of preference





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Technical Approach - cont.

- Develop a technology proposal as an approval vehicle
- Authorize the technology
- Designate Lead Test Engineer
- Develop Test/Work plan
- Finalize schedule/cost





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Technical Approach - cont.

- Acquire the technology
- Demonstrate the technology / collect data
- Compile data / develop reports
- Publish ITSr





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Technologies Evaluated

- 65 total technologies to date
 - Characterization - 18
 - Decontamination - 18
 - Scabbling - 6
 - Disassembly - 7
 - PPE - 3
 - Other - 13





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Technologies Selected

- Seven Demonstrations scheduled for FY99
 - Three completed
 - One scheduled for June
 - One scheduled for July
 - Two scheduled for August





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Technologies FY99

- Technical Associates Inc. PTS-27 Gas Ionization Direct Reading Tritium Detector System
- Lumi-Scint Portable Liquid Scintillation Counter
- Waterworks Crystals Superabsorbent Polymer (WWC)





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Technologies FY99 - cont.

- Hydraulic Crimper for sealing gas-tight, double-walled pipe
- NOCHAR[®] oil solidification polymer
- Tritium Clean-up Cart





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Future Plans

- Six (minimum) demonstrations for FY00
- Six (minimum) demonstrations for FY01
- Continue to search for technologies





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Technologies - FY00

- Solid-state Pin Diode direct reading surface tritium detector (mid FY00)
- QP Direct reading surface tritium proportional counter system (early FY00)
- Metal tritides detector (pending)





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Technologies - FY00 - cont.

- Rad Elec passive tritium air & surface monitor (early FY00)
- DBATS individual glove box tritium scrubbing system (mid FY00)
- Fiber-optic scintillation tritium detector for high activity liquids (pending)





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Technologies - FY01

- All possible, pending additional information:
 - SAMMS heavy metals removal from liquids
 - Techxtract H-3 Decon liquid
 - Wall Crawler Robotic dry decon system





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Technologies - FY01 - cont.

- “Hot-gas” decon system for large area decontamination
- Aerosol fogging ductwork lockdown / fixing system
- Abrasive-wire glove box cutting





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Communications

- STRATEGY
 - Use existing communication methods
 - Use the most effective communication medium
 - Focus on the technology end users





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Communications - cont.

- CBD notice
- Talks / Presentations
- Handout / Fact Sheets
- Conferences / Papers / Booths
- Video





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Budget

- \$5M total project*
 - \$0.6M FY98
 - \$1.6M FY99
 - \$1.4M FY00*
 - \$1.4M FY01*

* estimated





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Budget FY98

\$550 K

	<u>Planned</u>	<u>Act</u> .
• Management	\$ 30K	\$ 40K
• Tech Selection	\$270K	\$290K
• Demonstration	\$220K	\$ 10K
• Communication	\$ 30K	\$ 20K
• Carry over	\$ 0	\$190K





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Summary

- Thorough start
 - Well defined MHT needs
 - Matched needs to technologies
- Good acceptance / deployment %
- Technologies useful across DOE complex

